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$$= \frac{\frac{[1+(1/n)][1+(2/n)] \dots [1+(s/n)]}{1.2.3 \dots s} \cdot \frac{[1+(1/n)][1+(2/n)] \dots [1+(t/n)]}{1.2.3 \dots t}}{\frac{[1+(1/n)][1+(2/n)] \dots [1+(u/n)]}{1.2.3 \dots u} \cdot \frac{[1+(1/n)][1+(2/n)] \dots [1+(v/n)]}{1.2.3 \dots v}} y_{c+n}.$$

Let $n=\infty$, then $y_{c+n}=1+\frac{ab}{c+\infty}+\frac{a[a+1]b[b+1]}{1.2[c+\infty][c+\infty+1]}+\dots$

$\therefore y_{c+n}=1.$

$\therefore y_c = \frac{u! v!}{s! t!} = \frac{[c-1]! [c-a-b-1]!}{[c-a-1]! [c-b-1]!}.$

But $y_c = 1 + \frac{ab}{1.c} + \frac{a[a+1]b[b+1]}{1.2.c[c+1]} + \dots$

Therefore, etc. [See Forsyth's *Differential Equations*, chapter VI, page 185, for treatment of this series.]

PROBLEMS FOR SOLUTION.

ARITHMETIC.

112. Proposed by G. B. M. ZERR, A.M., Ph.D., Professor of Mathematics and Science, Chester High School, Chester, Pa.

Suppose 10% traction stock is 20% better in the market than 5% mining stock; if my income be \$500 from each, how much money have I paid for each, the whole investment bringing 6%?

123. Proposed by F. P. MATZ, M. Sc., Ph. D., Professor of Mathematics and Astronomy, Irving College, Mechanicsburg, Pa.

If $m=2$ cents be the interest on $M=100$ cents for $p=40$ days, find the yearly rate per cent.

*** Solutions of these problems should be sent to B. F. Finkel not later than January 10.

ALGEBRA.

111. Proposed by ARTEMAS MARTIN, A. M., Ph. D., LL. D., U. S. Coast and Geodetic Survey Office, Washington, D. C.

Solve the equation $x(y+z)=a(x+y+z)$, $y(\frac{x}{x+z})=b(x+y+z)$, $z(x+y)=c(x+y+z)$.